

## REMARKS

### I. Introduction

In response to the Office Action dated May 24, 2004, claims 11 and 26 have been canceled, and claims 1, 12, 16 and 27 have been amended. Claims 1-10, 12-25 and 27-30 remain in the application. Re-examination and re-consideration of the application, as amended, is requested.

### II. Prior Art Rejections

#### A. The Office Action Rejections

On page (2) of the Office Action, claims 1, 3-6, 13-16, 18, 20-21, and 28-30 were rejected under 35 U.S.C. §102(b) as being anticipated by Tayloe et al, U.S. Patent No. 5,095,500 (Tayloe). On page (5) of the Office Action, claims 2, 4, 7-10, 17, 19, 22, and 23-25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Tayloe in view of Montoya, U.S. Patent No. 6,400,943 (Montoya). On page (10) of the Office Action, claims 11-12 and 26-27 were rejected under 35 U.S.C. §103(a) as being unpatentable over Tayloe and Montoya and further in view of Hawkes et al, U.S. Patent No. 5,973,643 (Hawkes).

Applicants respectfully traverse these rejections.

#### B. The Applicants' Independent Claims

Independent claims 1 and 16 are generally directed to operating a wireless network. Claim 1 is representative and comprises:

(a) collecting and analyzing information from the wireless network into a collection and analysis system, wherein the information includes location information on mobile transceivers operating within the network; and

(b) optimizing the wireless network's operation from a network control system by intelligently forming radio frequency (RF) signal beams using the collected and analyzed information.

#### C. The Tayloe Reference

Tayloe describes a system and method of evaluating the radio coverage of a geographic area serviced by a digital cellular radiotelephone communication system is described which comprises a plurality of base stations each having a transmitter and a receiver and a plurality of mobile units having co-located transmitters and receivers for transmitting and receiving communication message

signals between the base stations and a mobile unit. During operation, the position of at least one of the mobile units operating within the geographic area is located when a call is received by a base station. The base station monitors the signal quality of the call and collects information relevant to the actual performance of the communication system. The mobile unit location and corresponding signal quality data are passed from the base station to a central operation and maintenance unit which collects the data, performs all necessary analytic and arithmetic computations, and provides a user-friendly representation of the characteristics of the radio coverage. With this representation of the radio coverage characteristics, the system operator can quickly and efficiently diagnose coverage deficiencies and take the necessary corrective action. By continuously monitoring subscriber calls and updating the pictographic representations, the system operator can actually observe the effect of the adopted modifications in a pseudo real-time fashion.

D. The Montoya Reference

Montoya describes a system and method that uses an advanced positioning system in combination with a cellular communication network to improve the performance of the network is disclosed. One embodiment of the network includes a mobile switching center (MSC), a location tracker system (LTS), and a plurality of base stations for serving at least one mobile unit in the network. The LTS is able to receive a location code from the mobile unit that represents a specific coordinate, or location, in the network. The mobile unit may have generated the location code by analyzing its position from a global positioning satellite, or by other means. The LTS stores the location code in a data base. Whenever the MSC needs to communicate with the mobile unit, it queries the database of the LTS to determine the last location of the mobile unit. The MSC then selects one of the base stations that serves the location of the mobile unit and establishes a cellular link therethrough.

E. The Hawkes Reference

Hawkes describes a location system for identifying locations of emitters in a cellular telephone service area. Searching identifies active emitters in the service area to find the coarse areas in which active emitters are located, using selection criteria to designate one or more of the active emitters as selected emitters. Emitter signals are measured with a plurality of sensors, each sensor at a different location. Groups of the sensors are tasked, one group of tasked sensors for each corresponding selected emitter. Each tasked sensor takes a measurement on an emitter signal

transmitted by the corresponding selected emitter. The measurements are processed to determine the location of each selected emitter based on the measurements from the group of tasked sensors.

F. The Applicants' Invention is Patentable Over the References

The Applicants' invention, as recited in independent claims 1 and 16 is patentable over the references, because it contains limitations not taught by the references. Specifically, the references do not teach or suggest the specific combination of limitations comprising: "collecting and analyzing information from the wireless network into a collection and analysis system, wherein the information includes location information on mobile transceivers operating within the network," and "optimizing the wireless network's operation from a network control system by intelligently forming radio frequency (RF) signal beams using the collected and analyzed information."

The Office Action, however, asserts that that combination of Tayloe, Montoya and Hawkes teaches these limitations. Specifically, with regard to the limitations directed to intelligently forming of radio frequency (RF) signal beams using the collected and analyzed information, as originally recited in dependent claims 11 and 26, the Office Action states that this is shown by Hawkes at col. 11, lines 2-11. In addition, with regard to the limitations directed to steering an RF signal beam in the direction of one or more mobile transceivers based on the collected and analyzed information, as recited in dependent claims 12 and 27, the Office Action states that this is shown by Hawkes at col. 11, lines 2-19.

Applicants' attorney respectfully disagrees.

At the indicated locations, the Hawkes reference does not teach or suggest these aspects of the Applicants' invention. Instead, at the indicated locations, the Hawkes reference merely states the following:

Hawkes: Col. 11, lines 2-19 (actually Col. 10, line 61 - Col. 11, line 19)

FIG. 4 shows a mobile location sensor 19 and its interfaces to the base station in a MSC-based approach. The base station equipment is cross-hatched and consists of the receive antennas 20, cables 21, and Rf multicoupler 23. Base stations typically have two antennas per sector each separated by 5 to 10 feet pointing in the same direction for diversity reception. In FIG. 4, antennas .alpha.0 and .alpha.1 are the two diversity antennas for sector .alpha.. Base stations may have one or more sectors. FIG. 4 shows a typical configuration of three sectors: .alpha., .beta., and .gamma., each pointing in different compass directions such as 30.degree., 150.degree., 270.degree. relative to north. The antennas 20 may collect transmissions from cellular telephones from any direction (omni-directional) or from a sector (directional). Typically, the beamwidth of a directional antenna in a three sector base

station is 120.degree. so that as the mobile cellular telephone moves around the cell, its transmissions can be intercepted by one or more directional antennas. The low loss cables 21 bring the signals to the RF multicoupler (RMC) 23 where they are amplified, non-cellular signals are filtered out by pre-selection filters, and distributed to other electronics of the base station. The directional couplers 22 are inserted just prior to the RF multicouplers 23 in the base station to permit injection of a calibration signal 17 into the RF multicouplers. One of the outputs from each RF multicoupler 23 is connected using RF coaxial cable 18 to the mobile location sensor 19.

The above description in Hawkes merely refers to directional antennae positioned at a multi-sector base station. However, nothing in this description refers to intelligently forming RF signal beams using collected and analyzed information from the wireless network. In addition, nothing in this description refers to steering an RF signal beam in the direction of one or more mobile transceivers based on the collected and analyzed information.

Thus, even when combined, the references would not teach or suggest all the elements of Applicants' claimed invention. Moreover, the various elements of Applicants' claimed invention together provide operational advantages over Tayloe, Montoya, and Hawkes. In addition, Applicants' invention solves problems not recognized by Tayloe, Montoya, and Hawkes.

Thus, Applicants submit that independent claims 1 and 16 are allowable over Tayloe, Montoya, and Hawkes. Further, dependent claims 2-10, 12-15 and 17-25, 27-30 are submitted to be allowable over Tayloe, Montoya, and Hawkes in the same manner, because they are dependent on independent claims 1 and 16, respectively, and thus contain all the limitations of the independent claims. In addition, dependent claims 2-10, 12-15 and 17-25, 27-30 recite additional novel elements not shown by Tayloe, Montoya, and Hawkes.

### III. Conclusion

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited.

Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

Respectfully submitted,

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